

## **WHAT IS CLAIMED IS:**

1. A watercraft comprising an propulsion device, an internal combustion engine that powers the propulsion device, a change device that changes the propulsion device between a first mode and a second mode, the propulsion device being powered by the engine in the first mode and not powered by the engine in the second mode, a setting device that sets an engine output of the engine between a minimum level and a maximum level, an operating device that provides a first command that corresponds to either the first mode or the second mode and provides a second command that corresponds to the engine output, a first control device controlling the change device based upon the first command, a second control device controlling the setting device based upon the second command, and a sensing device that senses either the first mode or second mode of the propulsion device to provide a mode signal, the second control device regulating the setting device to set the engine output generally at the minimum level or to lower the engine output generally to the minimum level when the first command from the operating device and the mode signal from the sensing device differ from each other.

2. The watercraft as set forth in Claim 1 additionally comprising an air intake device that introduces air to a combustion chamber of the engine, the air intake device having a throttle valve that regulates an amount of the air, the throttle valve moving generally between a fully closed position and a fully open position, the engine output varying in accordance with a position of the throttle valve between the fully closed position and the fully open position, the setting device actuating the throttle valve to set the engine output.

3. The watercraft as set forth in Claim 2, wherein the setting device places the throttle valve at an adjacent position located adjacent to the fully closed position to set the engine output generally at the minimum level or moves the throttle valve to the adjacent position to lower the engine output generally to the minimum level.

4. The watercraft as set forth in Claim 3 additionally comprising a second sensing device that senses an actual position of the throttle valve to provide a position signal, the first control device allowing the change device to change the propulsion device from the first mode to the second mode based upon the position signal when the throttle valve is placed at the adjacent position.

5. The watercraft as set forth in Claim 1 additionally comprising a second sensing device that senses an engine speed of the engine to provide an engine speed signal, the first control device allowing the change device to change the propulsion

device from the second mode to the first mode based upon the engine speed signal when the engine speed is equal to or lower than a preset engine speed.

6. The watercraft as set forth in Claim 1 additionally comprising a communication network, the operating device, the first control device and the second control device communicate with each other through the communication network.

7. The watercraft as set forth in Claim 6, wherein operating device creates pieces of the first command one by one and intermittently transfers each piece of the first command one after another to the first control device, the first control device receives the pieces of the first command and measures an elapse time that elapses between one of the pieces of the first command and another one of the pieces of the first command that immediately follows said one of the pieces of the first command, the first control device creates a notice indicative of an abnormal state and transfers the notice when the elapse time is equal to or greater than a preset time.

8. The watercraft as set forth in Claim 6, wherein operating device creates pieces of the second command one by one and intermittently transfers each piece of the second command one after another to the second control device, the second control device receives the pieces of the second command and measures an elapse time that elapses between one of the pieces of the second command and another one of the pieces of the second command that immediately follows said one of the pieces of the second command, the second control device creates a notice indicative of an abnormal state and transfers the notice when the elapse time is equal to or greater than a preset time.

9. The watercraft as set forth in Claim 1, wherein the change device includes an electric motor.

10. The watercraft as set forth in Claim 1, wherein the setting device includes an electric motor.

11. The watercraft as set forth in Claim 1, wherein the propulsion device and the engine are incorporated in a single unit.

12. A watercraft comprising an propulsion device, an internal combustion engine that powers the propulsion device, a change device that changes the propulsion device between a first mode and a second mode, the propulsion device being powered by the engine in the first mode and not powered by the engine in the second mode, a setting device that sets an engine output of the engine between a minimum level and a maximum level, an operating device that provides a first command that corresponds to either the first mode or the second mode and provides a second command that corresponds to the

engine output, a first control device controlling the change device based upon the first command, a second control device controlling the setting device based upon the second command, and a sensing device that senses an engine speed of the engine to provide an engine speed signal, the first control device allowing the change device to change the propulsion device from the second mode to the first mode based upon the engine speed signal when the engine speed is equal to or lower than a preset engine speed.

13. The watercraft as set forth in Claim 12, wherein the engine speed varies in accordance with the engine output.

14. The watercraft as set forth in Claim 12 additionally comprising an air intake device that introduces air to a combustion chamber of the engine, the air intake device having a throttle valve that regulates an amount of the air, the throttle valve moving generally between a fully closed position and a fully open position, and a second sensing device that senses an actual position of the throttle valve to provide a position signal, the first control device allowing the change device to change the propulsion device from the first mode to the second mode based upon the position signal when the throttle valve is placed at an adjacent position located adjacent to the fully closed position.

15. The watercraft as set forth in Claim 12 additionally comprising a communication network, the operating device, the first control device and the second control device communicate with each other through the communication network.

16. A watercraft comprising an propulsion device, an internal combustion engine that powers the propulsion device, a changeover mechanism that changes the propulsion device between a first mode and a second mode, the propulsion device being powered by the engine in the first mode and not powered by the engine in the second mode, an air intake device that introduces air to a combustion chamber of the engine, the air intake device having a throttle valve that regulates an amount of the air, a throttle valve actuator actuating the throttle valve between a fully closed position and a fully open position, an operating device that provides a first command that corresponds to either the first mode or the second mode and provides a second command that corresponds to a position of the throttle valve, a first control device controlling the changeover mechanism based upon the first command, a second control device controlling the throttle valve actuator based upon the second command, and a sensing device that senses either the first mode or second mode of the propulsion device to provide a mode signal, the second control device regulating the throttle valve actuator to place the throttle valve at an adjacent

position located adjacent to the fully closed position or to move the throttle valve to the adjacent position when the first command and the mode signal differ from each other.

17. The watercraft as set forth in Claim 16 additionally comprising a second sensing device that senses an actual position of the throttle valve to provide a position signal, the first control device allowing the change device to change the propulsion device from the first mode to the second mode based upon the position signal when the throttle valve is placed at the adjacent position.

18. The watercraft as set forth in Claim 16 additionally comprising a second sensing device that senses an engine speed of the engine to provide an engine speed signal, the first control device allowing the changeover mechanism to change the propulsion device from the second mode to the first mode based upon the engine speed signal when the engine speed is equal to or lower than a preset engine speed.

19. The watercraft as set forth in Claim 16 additionally comprising a communication network, the operating device, the first control device and the second control device communicate with each other through the communication network.

20. A control method for a watercraft having a propulsion device and an engine, the method comprising operating a change device that changes the propulsion device between a first mode and a second mode based upon a first command that corresponds to either the first mode or the second mode, the propulsion device being powered by the engine in the first and not powered by the engine in the second mode, operating a setting device that sets an engine output of the engine between a minimum level and a maximum level based upon a second command that corresponds to the engine output, sensing either the first mode or the second mode of the propulsion device to provide a mode signal, determining whether the first command and the mode signal differ from each other, and setting the engine output generally at the minimum level or lowering the engine output generally to the minimum level when the first command and the mode signal differ from each other.

21. The control method as set forth in Claim 20 additionally comprising sensing an engine speed of the engine to provide an engine speed signal, determining whether the engine speed is equal to or lower than a preset engine speed based upon the engine speed signal, and allowing the change device to change the propulsion device from the second mode to the first mode.

22. A control method for a watercraft having a propulsion device and an engine, the method comprising operating a change device that changes the propulsion device

between a first mode and a second mode based upon a first command that corresponds to either the first mode or the second mode, the propulsion device being powered by the engine in the first and not powered by the engine in the second mode, operating a setting device that sets an engine output of the engine between a minimum level and a maximum level based upon a second command that corresponds to the engine output, sensing an engine speed of the engine to provide an engine speed signal, determining whether the engine speed is equal to or lower than a preset engine speed based upon the engine speed signal, and allowing the change device to change the propulsion device from the second mode to the first mode when the determination is positive.

23. A control method for a watercraft having a propulsion device and an engine, the method comprising operating a change device that changes the propulsion device between a first mode and a second mode based upon a first command that corresponds to either the first mode or the second mode, the propulsion device being powered by the engine in the first and not powered by the engine in the second mode, operating a throttle valve actuator that actuate a throttle valve that regulates an amount of air to a combustion chamber of the engine to move generally between a fully closed position and fully open position based upon a second command that corresponds to a position of the throttle valve, sensing either the first mode or the second mode of the propulsion device to provide a mode signal, determining whether the first command and the mode signal differ from each other, and placing the throttle valve at an adjacent position located adjacent to the fully closed position or moving the throttle valve to the adjacent position when the first command and the mode signal differ from each other.

24. The control method as set forth in Claim 23 additionally comprising sensing an actual position of the throttle valve, determining whether the throttle valve is placed at the adjacent position based upon the sensed actual position, and allowing the change device to change the propulsion device from the first mode to the second mode when the throttle valve is placed at the adjacent position.

25. The control method as set forth in Claim 23 additionally comprising sensing an engine speed of the engine to provide an engine speed signal, determining whether the engine speed is equal to or lower than a preset engine speed based upon the engine speed signal, and allowing the change device to change the propulsion device from the second mode to the first mode when the engine speed is equal to or lower than a preset engine speed.

26. A system for controlling the throttle valve position and shift mode of an engine of a watercraft engine so as to reduce abrupt engine speed and shift mode transitions, the system comprising: an operator control device that generates throttle valve position and shift mode control signals in response to actions of an operator; and a control circuit that controls the throttle valve position and shift mode of the engine based on the throttle valve position and shift mode control signals generated by the operator control device, and based further on data indicative of an actual shift mode and throttle valve position of the engine; wherein the control circuit controls a rate of change of the throttle valve position to inhibit abrupt engine speed transitions, and wherein the control circuit further delays operator-commanded transitions in the engine's shift mode as needed to allow the throttle valve to be placed in an approximately closed state before such shift mode transitions occur.

27. The system of Claim 26, wherein the control signals generated by the operator control device are communicated to the control circuit as commands.

28. The system of Claim 27, wherein the commands are communicated to the control circuit over a local area network of the watercraft.

29. The system of Claim 26, wherein the control circuit comprises at least one processing unit that executes a control program.